

We Claim:

1. A system for actively monitoring a patient, said system comprising:
at least one body-worn monitoring device, each said at least one body-worn monitoring device including at least one sensor capable of measuring at least one physiologic parameter and detecting at least one predetermined event;
at least one intermediary device linked to said at least one body-worn monitoring device by at least one network;
at least one respondent device linked to said at least one intermediary device through at least one network, said at least one of said body-worn monitoring device, said at least one intermediary device and said at least one respondent device being programmed to perform a specified function automatically when said predetermined event is realized.
2. A system according to Claim 1, wherein said at least one respondent device is a personal digital assistant (PDA).
3. A system according to Claim 1, wherein said at least one respondent device is a cellular phone.
4. A system according to Claim 1, wherein said at least one intermediary device is a PAN to TCP/UDP translator.
5. A system according to Claim 1, wherein said at least one intermediary

device is a PDA.

6. A system according to Claim 1, wherein said at least one intermediary device is a cellular phone.

7. A system according to Claim 1, wherein said at least one intermediary device is at least one computer.

8. A system according to Claim 1, wherein said at least one intermediary device is capable of being patient-worn.

9. A system according to Claim 1, including at least one computer linked to said at least one intermediary device by at least one network.

10. A system according to Claim 1, wherein said at least one physiologic sensor includes an ECG electrodes assembly.

11. A system according to Claim 1, wherein said at least one physiologic sensor includes a pulse oximeter.

12. A system according to Claim 1, wherein said at least one physiologic sensor includes a thermometer for measuring body temperature.

13. A system according to Claim 1, wherein said at least one patient monitoring device and said at least one intermediary device are linked by a first network.

14. A system according to Claim 13, wherein said at least one intermediary device and said at least one respondent device are linked by a second network.

15. A system according to Claim 14, wherein said first network and said second network are the same network.

16. A system according to Claim 14, wherein said first network and said second network are separate networks.

17. A system according to Claim 14, wherein at least one of said first and second networks are wireless networks.

18. A system according to Claim 17, wherein said first network is a local personal area wireless network and said second network is a wide area wireless network.

19. A system according to Claim 18, wherein said second network is a Wi-LAN.

20. A system according to Claim 14, wherein said at least one patient-worn

monitoring device includes a beacon for maintaining periodic connectivity over said first wireless network with said at least one intermediary device.

21. A system according to Claim 20, wherein patient data is transmitted in a data packet embedded in said beacon.

22. A system according to Claim 14, wherein said at least one intermediary device is programmed to transmit a beacon in order to periodically maintain connectivity with said at least one respondent device over said second wireless network.

23. A system according to Claim 1, wherein each of said at least one intermediary device and said at least one respondent device are in bidirectional communication with one another.

24. A system according to Claim 22, wherein each of said at least one respondent device and said at least one intermediary device are in bi-directional communication with one another within said second wireless network.

25. A system according to Claim 1, wherein said at least one body-worn monitoring device includes sensors for measuring more than one physiologic parameter.

26. A system according to Claim 25, wherein said at least one of said at least one body-worn monitoring device and said intermediary device include means for multiplexing a measured signal.

27. A system according to Claim 1, wherein said at least one intermediary device includes a display.

28. A system according to Claim 1, wherein said at least one intermediary device includes a user interface.

29. A system according to Claim 1, wherein at least one of said body-worn monitoring device and said at least one intermediary device include means for determining patient location.

30. A system according to Claim 29, wherein said patient location determining means includes a periodic transmission beacon.

31. A system according to Claim 30, wherein said periodic transmission beacon can include a transmission data packet containing at least a portion of physiologic signal from a patient.

32. A system according to Claim 20, wherein the periodic rate of said beacon can be varied based on the physiologic parameter that is being measured by said at least one sensor.

33. A system according to Claim 22, wherein the periodic rate of said beacon can be varied based on the physiologic parameter that is being measured by said at least one sensor.

34. A system according to Claim 1, including a plurality of respondent devices, said system including means for communicating with at least one auxiliary respondent device if a primary respondent device cannot receive the signal indicating the predetermined event has occurred.

35. A system according to Claim 1, wherein said at least one respondent device is programmed to automatically contact emergency services upon receipt of said signal indicative of predetermined event.

36. A system according to Claim 1, wherein said at least one body-worn monitoring device includes a unique patient identifier, said unique patient identifier being transmitted with said physiologic data to said at least one intermediary device.

37. A system according to Claim 36, wherein said at least one body-worn monitoring device includes means for obtaining said unique patient identifier, said patient identifier being appended to the physiologic signal.

38. A system according to Claim 1, wherein said at least one respondent device can selectively request physiologic data from said at least one body-worn monitoring device.

39. A system according to Claim 1, wherein said at least one body-worn monitoring device periodically transmits data to said at least one intermediary device, at least one of said at least one intermediary device and said at least one body-worn monitoring device including processing means for determining from said physiologic data whether said predetermined event has occurred.

40. A system according to Claim 39, wherein said at least one intermediary device includes processing means for discriminating said physiologic data and transmitting a signal to said respondent device only if said discriminating means determines said predetermined event has occurred.

41. A system according to Claim 1, wherein said at least one body-worn monitoring device includes means for detecting patient movement.

42. A system according to Claim 41, wherein said patient movement detecting means includes at least one accelerometer.

43. A system according to Claim 41, wherein said patient movement means includes means for detecting respiration through chest wall movements.

44. A system according to Claim 41, wherein said patient movement means includes means for detecting heart rate through chest wall movement.

45. A system according to Claim 1, wherein said at least one physiologic sensor includes audio transducer means for detecting respiratory and heart sounds of said patient.

46. A system according to Claim 1, wherein at least one of said at least one intermediary device and said body-worn monitoring device includes at least one rechargeable battery for powering said device.

47. A system according to Claim 46, wherein at least one of said at least one intermediary device and said body-worn monitoring device includes means for recharging said at least one battery.

48. A system according to Claim 1, wherein one of said at least one intermediary device and said at least one body-worn monitoring device includes means for indicating when said predetermined event has occurred.

49. A system according to Claim 48, wherein said indicating means includes at least one audio annunciator.

50. A system according to Claim 48, wherein said indicating means includes at least one LED or LCD.

51. A system for actively monitoring a patient, said system comprising:
at least one body-worn monitoring device, each said at least one body-worn monitoring device including at least one sensor capable of measuring at least one physiologic parameter and detecting at least one predetermined event;

at least one intermediary device linked to said at least one patient-worn monitoring device by at least one network;

at least one computer linked to at least one intermediary device by at least one network; and

at least one respondent device linked to said at least one computer through at least one network, said at least one of said at least one body-worn monitoring device, said at least one intermediary device, said at least one computer and said at least one respondent device being programmed to perform a specified function automatically when said predetermined event is realized.

52. A system for actively monitoring a patient, said system comprising:

at least one body-worn monitoring device, each said at least one body-worn

monitoring device including at least one sensor capable of measuring at least one physiologic parameter and detecting at least one predetermined event;

at least one intermediary device, linked to said at least one body-worn monitoring device by means of a first wireless network;

at least one respondent device linked to said at least one intermediary device by a second wireless network, wherein said at least one of said at least one body-worn monitoring device, said at least one intermediary device and said at least one respondent device is programmed to perform a specified function automatically when said predetermined event is realized.

53. A system according to Claim 52, wherein each of said first and second wireless networks are different networks.

54. A system according to Claim 52, wherein said first network is a personal area network and said second network is at least one of a wide area network and a Wi-LAN.

55. A system for actively monitoring a patient, said system comprising:
at least one body-worn monitoring device, each said at least one body-worn monitoring device including at least one sensor for measuring at least one physiologic parameter and detecting at least one predetermined event;
at least one intermediary device, linked to said at least one body-worn monitoring

device by means of a first wireless network;

at least one computer linked to said at least one intermediary device by a second wireless network; and

at least one respondent device linked to said computer by said second wireless network wherein said at least one of said body-worn monitoring device, said at least one intermediary device, said at least one computer and said at least one respondent device is programmed to perform a specified function automatically when said predetermined event is realized.

56. A system according to Claim 55, wherein each of said first and second wireless networks are different networks.

57. A system according to Claim 55, wherein said first wireless network is a personal area network and said second wireless network is at least one of a wide area network and a Wi-LAN.

58. A system for communicating data, said system comprising:
at least one monitoring device, said device having at least one sensor for continuously measuring at least one physiologic parameter and detecting at least one predetermined event;
at least one network linking said at least one monitoring device to at least one respondent device wherein said network is normally operatively in a first state where the network is off except when periodic data is transmitted, said network having a second state

where data is transmitted upon said at least one predetermined event having occurred.

59. A system according to Claim 58, wherein said periodic transmitted data includes patient status and sensor status.

60. A system according to Claim 58, wherein the duty cycle of transmission of data changes based upon the state of said at least one network.

61. A method for communicating data using at least one network linking at least one respondent device with at least one monitoring device, said method comprising the steps of:

continuously measuring at least one physiologic parameter for purposes of detecting a predetermined event using said at least one monitoring device;

operating said network in an off state in which said network is off except for the periodic transmission of patient status data while said network is in a first operative state wherein said predetermined event has not occurred; and

transmitting said measured data along said at least one said network in a second state when said predetermined event has occurred.

62. A method for performing context management, said method comprising the steps of:

producing a continuous physiologic signal, as detected by a monitoring

device;

associating at least one unique hardware identifier to said continuous physiologic signal; and

binding a unique patient identifier to said continuous signal wherein a change in said physiologic signal in which said signal is no longer continuous will cause the unique patient identifier to unbind from said signal.

63. A method according to Claim 62, wherein the source of said patient identifier is a biometric input.

64. A method according to Claim 62, wherein the source of said patient identifier is an RFID tag.

65. A method for performing patient to device context management comprising the steps of:

- producing a continuous physiologic signal, as detected by a monitoring device;
- associating a unique monitoring device identifier to a unique patient identifier;
- appending said unique patient identifier to said continuous physiologic signal,

wherein a change in said physiologic signal in which said signal is no longer continuous will cause the unique patient identifier to disassociate from said signal.

66. A method according to Claim 65, wherein said associating step

includes the associating of more than one device identifier prior to said appending step.

67. A method according to Claim 65, wherein the association of said patient identifier and patient identity is secret.

68. A method for protecting privacy of patient information comprising the steps of:
producing a continuous physiologic signal, as detected by a monitoring device;
associating a unique monitoring device identifier to a unique patient identifier;
appending said unique patient identifier to said continuous physiologic signal wherein the association between patient identity and said unique patient identifier is secret.

69. A method for performing patient to caregiver context management comprising the steps of:
associating a at least one unique monitoring device identifier to a unique patient identifier;
associating a unique respondent device identifier to a unique caregiver identifier;
associating said at least one unique monitoring device identifier to at least one unique respondent device identifier thereby associating at least one unique caregiver identifier to at least one unique patient identifier.

70. A method according to Claim 69, including a plurality of caregivers, each said caregiver having a unique caregiver identifier.

71. A method according to Claim 70, including the step of associating each of said caregivers with said identifiers simultaneously.

72. A method for performing patient to environment context management comprising the steps of:

producing a continuous physiologic signal, as detected by a monitoring device;
associating a unique monitoring device identifier to a unique patient identifier;
appending said unique patient identifier to said continuous physiologic signal;
associating a unique location device identifier to at least one unique monitoring device identifier thereby associating a patient location to a unique patient identifier.

73. A method according to Claim 72, wherein a change in said physiologic signal in which said signal is no longer continuous will cause the patient location identifier to disassociate from said location device identifier.